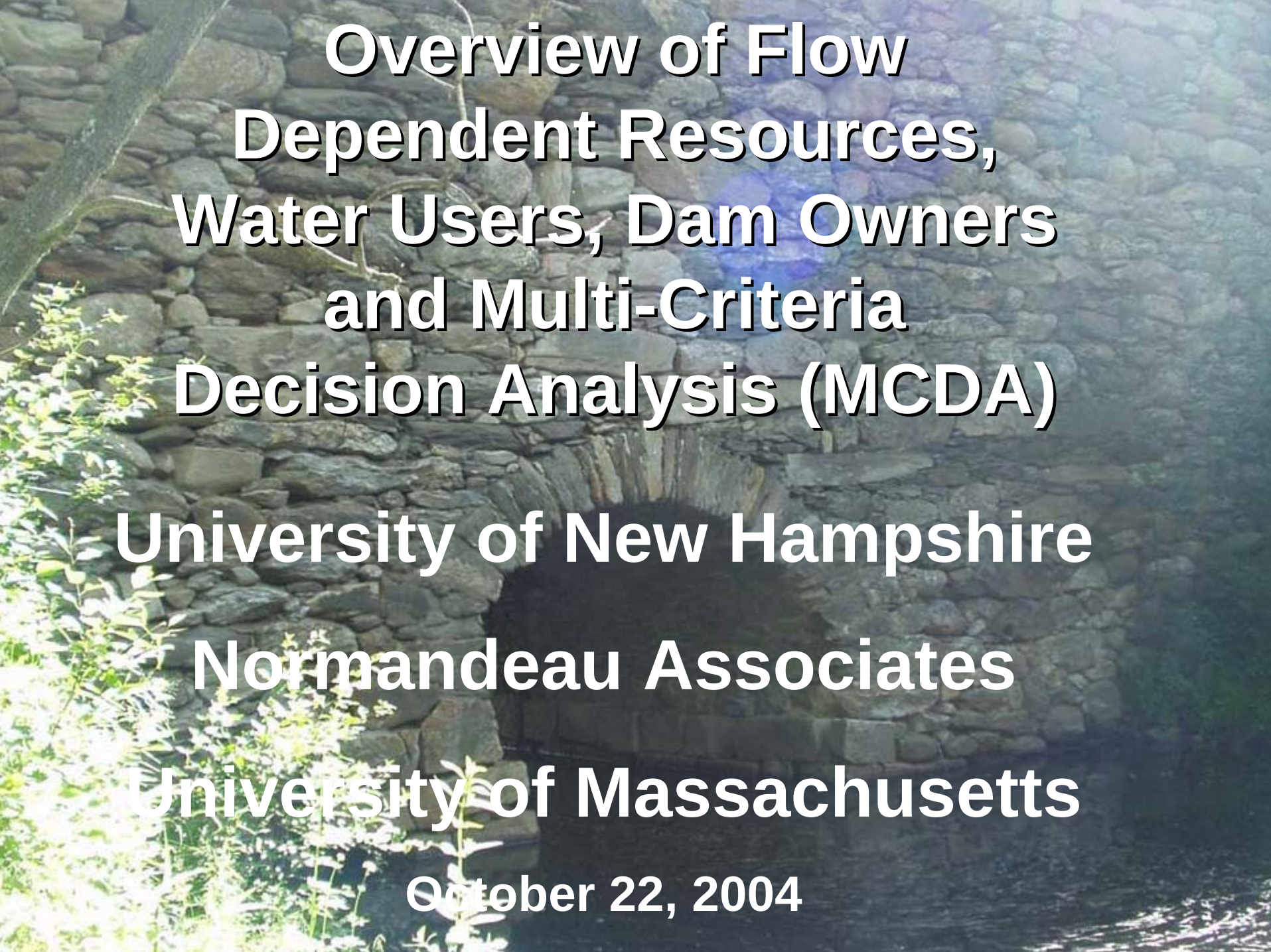


Overview of Flow Dependent Resources, Water Users, Dam Owners and Multi-Criteria Decision Analysis (MCDA)

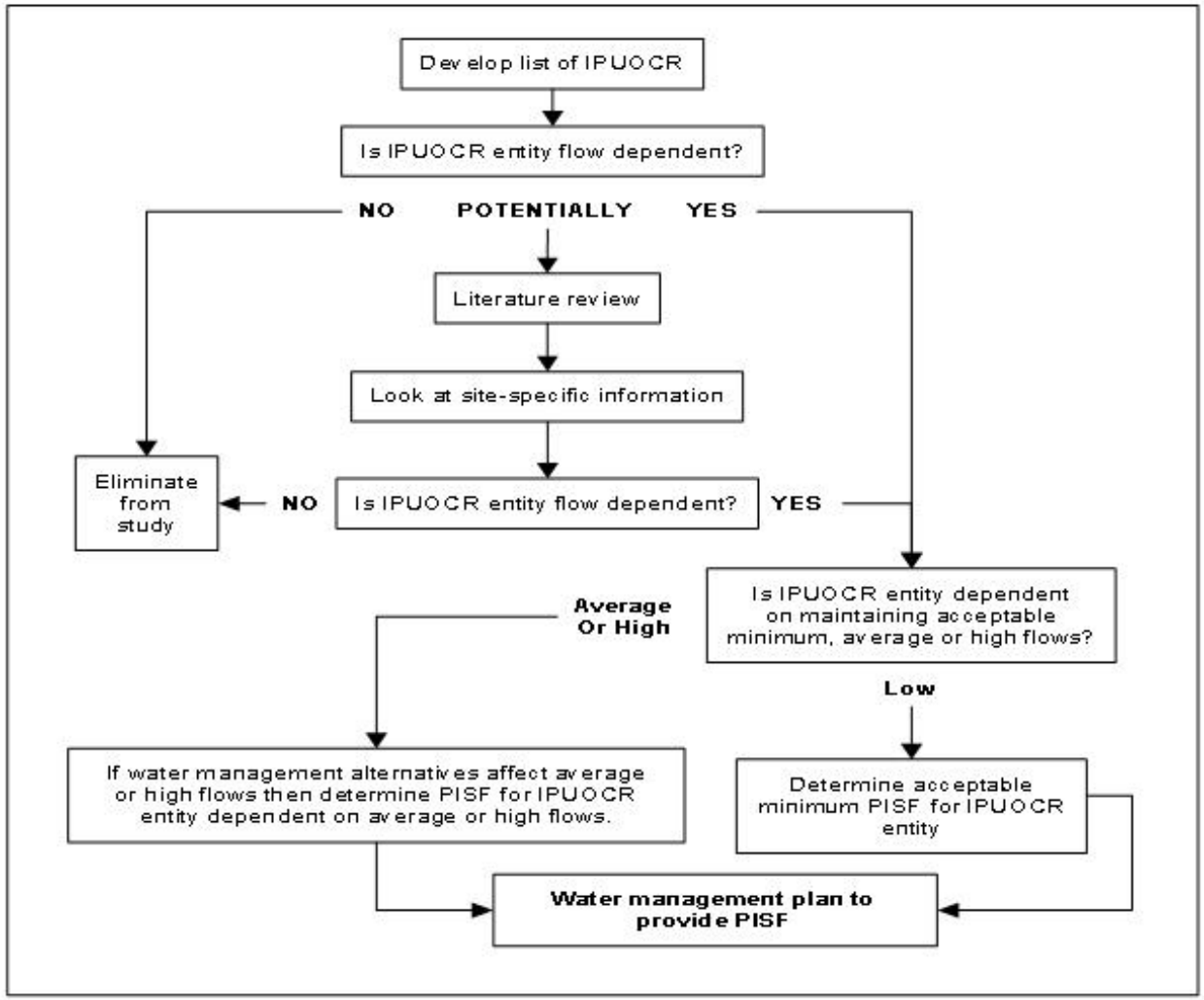
University of New Hampshire

Normandeau Associates

University of Massachusetts

October 22, 2004

IPUOCR Flow Dependence



Flow dependent resources

- Recreation
- Hydroelectric Energy
- Pollution Abatement

- Fowlers Toad
- Pied Billed Grebe
- Wood Turtle
- Osprey
- Common Loon
- Long's Bitter Cress
- Wild Garlic

- Emergent Wetlands
- Southern New England High Energy Riverbank
- Southern New England Floodplain Forest

- Fish and Fish Habitat
- Mussels
- Insects
- T/E Banded Sunfish
- River Morphology

- Public Water Supply

PISF to WMP

- Different resources dependent on different flows (low, average, high)
- Where possible, flows will be described in terms of frequency of occurrence and duration of events relative to benchmarks
- Multi-species approach will be used where appropriate
- Conflicts among resource needs and between resource needs and water user/dam owner needs will be identified, if present
- MCDA is one tool we will look at for resolving conflicts

Hydropower and Recreational Dams on the Designated Reach (Hydropower, Recreation)

WATERLOOM POND DAM	NEW IPSWICH
OTIS DAM	GREENVILLE
SOUHEGAN RIVER III DAM	GREENVILLE
SOUHEGAN RIVER	GREENVILLE
SOUHEGAN RIVER III DAM	WILTON
PINE VALLEY MILL DAM	WILTON
MCLANE DAM	MILFORD
SOUHEGAN RIVER DAM	NEW IPSWICH
SOUHEGAN RIVER DAM	WILTON
SOUHEGAN RIVER DAM	WILTON
GOLDMAN DAM	MILFORD
MERRIMACK VILLAGE DAM	MERRIMACK

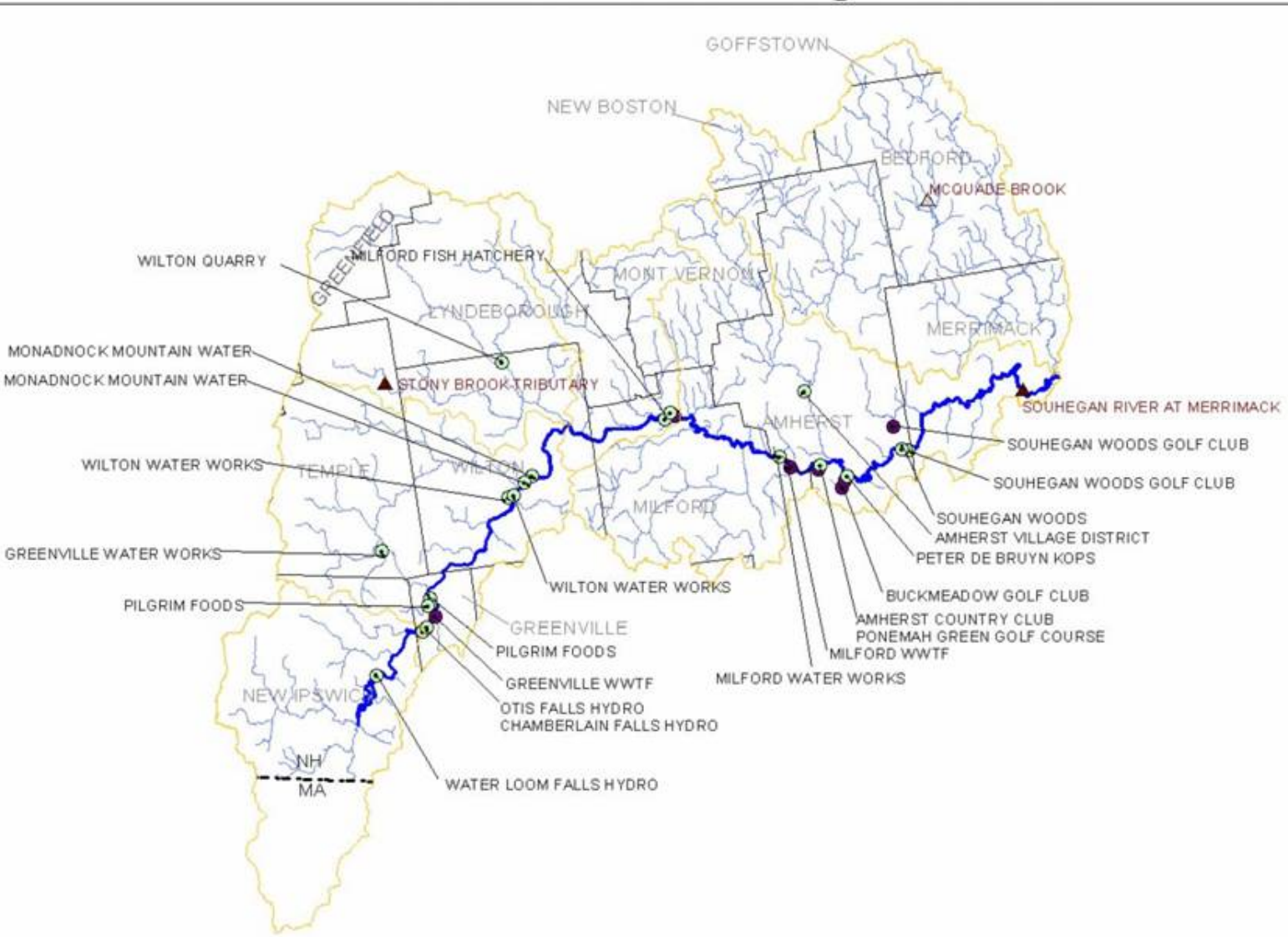
Affected Water Users

- Amherst Country Club
- Buckmeadow Golf Club
- Town of Greenville Water and WWTF
- Alden Greenwood Hydro Plants
- Town of Milford Water and WWTF
- Monadnock Springs
- Milford Fish Hatchery
- Pennichuck Water Works
- Peter De Bruyn Kopps
- Pike Industries
- Pilgrim Foods
- Ponemah Green Golf Course
- Souhegan Woods Golf Club
- Wilton Water Works

Types of Water Users and Dam Owners

- Golf Courses – spring/summer water use
- Water Supply – year round use
- Hydropower – fall through spring
- Industrial/Food Processing – year round
- Agricultural – summer water use
- Fish Hatchery – year round use

Souhegan Affected Water User Facilities: Source and Discharge Locations



The coverages presented are under constant revision as new sites or facilities are added. They may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes. Water users database last updated January 2004.

Map produced January 23, 2004

Legend

Souhegan Water Users

- Source
- Discharge

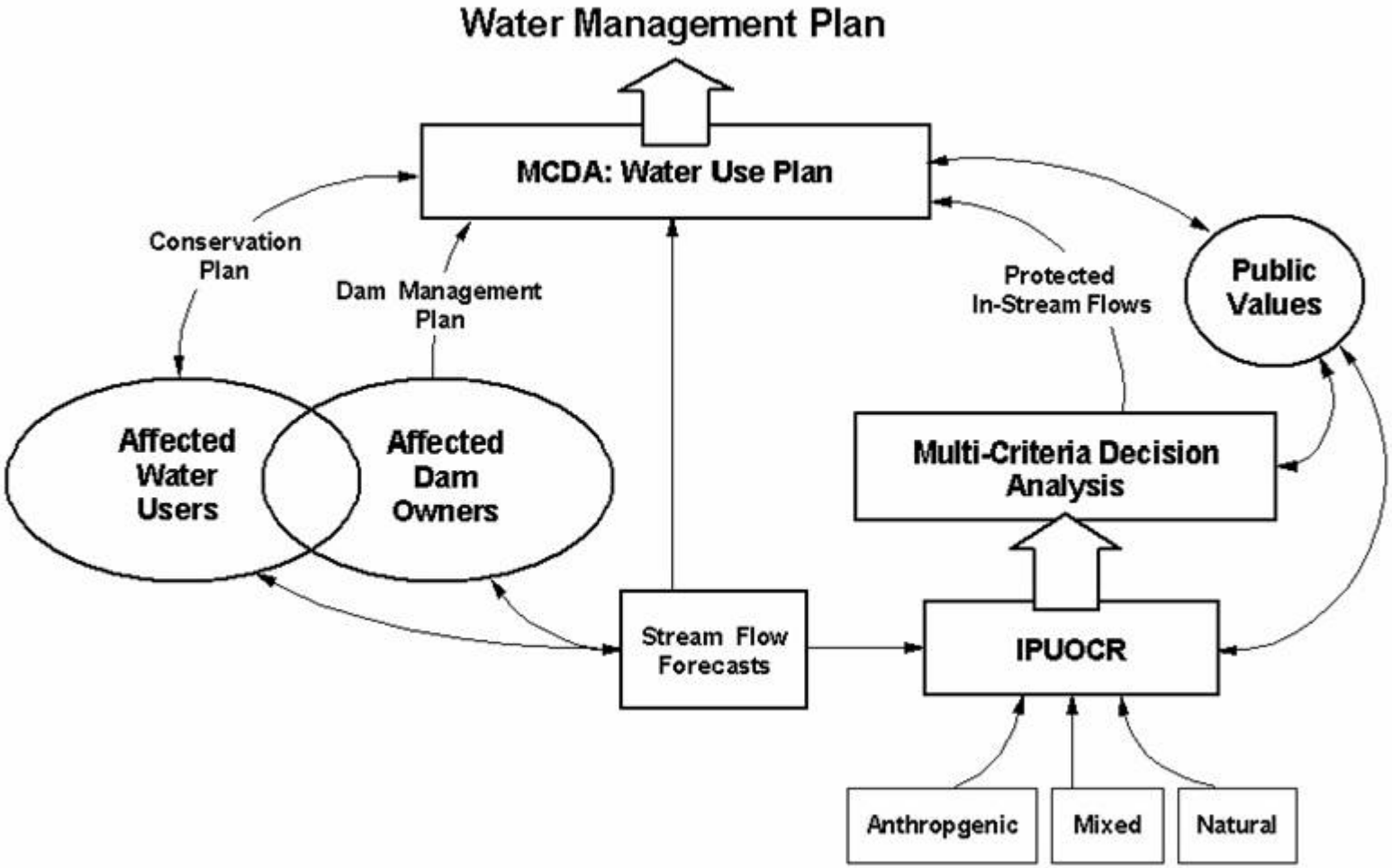
Stream Gages

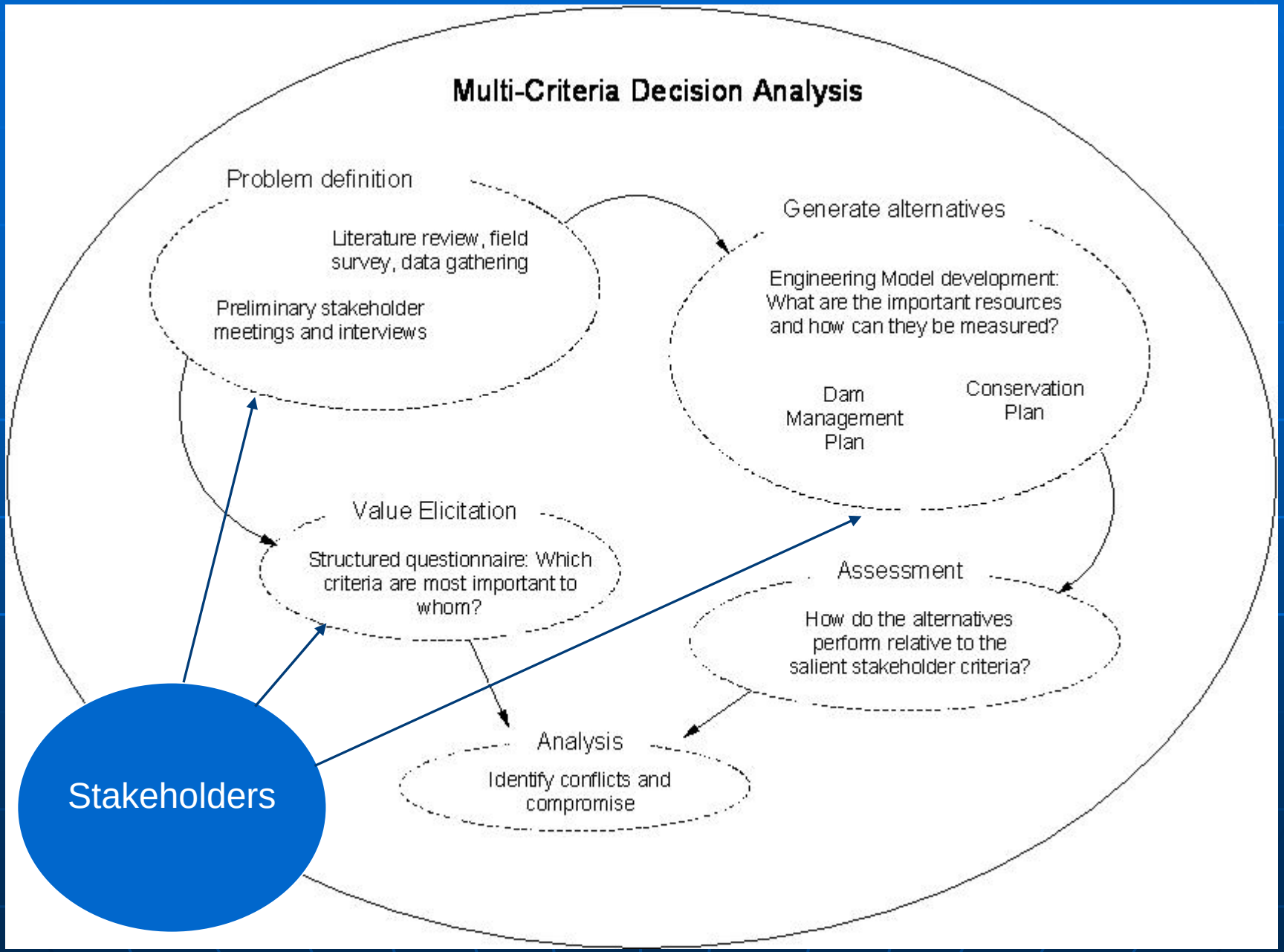
- Active
- Inactive

- Designated Reach
- Hydrology
- State boundary
- Town boundary
- Souhegan WMPA

N

0 1 2 3 4 Miles


Water Management Plan
MCDA: Water Use Plan
Conservation Plan
Dam Management Plan
Protected In-Stream Flows
Public Values
Affected Water Users
Affected Dam Owners
Multi-Criteria Decision Analysis
Stream Flow Forecasts
IPUOCR
Anthropgenic
Mixed
Natural


Multi-Criteria Decision Analysis
Problem definition
Literature review, field survey, data gathering
Preliminary stakeholder meetings and interviews
Generate alternatives
Engineering Model development: What are the important resources and how can they be measured?
Dam Management Plan
Conservation Plan
Value Elicitation
Structured questionnaire: Which criteria are most important to whom?
Assessment
How do the alternatives perform relative to the salient stakeholder criteria?
Analysis
Identify conflicts and compromise
Stakeholders

Analysis: Which stakeholders prefer which alternatives?